CLAIMS

The embodiments of an invention in which an exclusive property or right is claimed are defined as follows:

1. A tunable laser assembly, said assembly comprising:

a laser;

a mirror; and

a grating, said grating pivotably mounted between said laser and said mirror wherein movement of said grating relative to said laser varies the wavelength of energy emitted from the laser.

2. The assembly of claim 1, wherein said laser is a side emitting laser.

3. The assembly of claim 1, wherein said laser is a vertical cavity surface emitting laser.

4. The assembly of claim 1, wherein said mirror comprises a highly reflective coating.

5. The assembly of claim 1, wherein said mirror is positioned so that the energy emitted from said laser and reflected from said grating impinges upon said mirror.

6. A tunable laser assembly, said assembly comprising:

a laser;

a detector; and

a grating, said grating pivotably mounted adjacent said laser wherein movement of said grating relative to said laser varies the wavelength of the energy emitted from the laser.

7. The assembly of claim 6, further comprising a mirror.

8. The assembly of claim 6, wherein said laser is a side emitting laser.

9. The assembly of claim 6, wherein said laser is a vertical cavity surface emitting laser.

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10. The assembly of claim 6, wherein said detector measures absorption of energy.

11. The assembly of claim 6, wherein said detector measures transmission of energy.

12. The assembly of claim 6, wherein said detector comprises a flow sensor.

13. The assembly of claim 6, wherein said grating is positioned above said laser and said assembly additionally comprises a cavity positioned beneath said laser, said detector being positioned within said cavity.

14. The assembly of claim 13, wherein said cavity is formed within a housing, said housing comprising a top portion and a bottom portion, said housing top portion being transparent to energy emitted by said laser.

15. The assembly of claim 6, additionally comprising collimating optics positioned between said laser and said grating.

16. A tunable laser assembly for detection and determination of chemical fluids, said assembly comprising:

a vertical cavity surface emitting laser;

a detector positioned to receive energy from said laser; and

a grating, said grating cooperatively transmitting energy emitted by said laser to said detector, said grating pivotably mounted adjacent said laser.

17. The assembly of claim 16, further comprising a mirror.

18. The assembly of claim 16 wherein the laser is a vertical cavity surface emitting laser.

19. The assembly of claim 16 wherein said detector measures absorption of energy.

20. The assembly of claim 16, wherein said detector measures transmission of energy.

21. The assembly of claim 16, wherein said detector comprises a flow sensor.

22. The assembly of claim 16, wherein said grating is positioned above said laser and said assembly additionally comprises a cavity positioned beneath said laser, said detector being positioned within said cavity.

23. The assembly of claim 22, wherein said cavity is formed within a housing, said housing comprising a top portion and a bottom portion, said housing top portion being transparent to energy emitted by said laser.

24. The assembly of claim 16, additionally comprising collimating optics positioned between said laser and said grating.

25. A tunable laser assembly for detection of chemical fluids, said assembly comprising:

a laser comprising an emission surface;

a cavity comprising a top portion and a bottom portion, said cavity top portion being transparent to energy emitted from said laser;

a detector positioned in said cavity; and

a grating, pivotably mounted adjacent said laser, said grating cooperatively transmitting energy emitted from said laser to said detector, wherein changing the angle of said grating changes the wavelength of the energy incident upon the detector.

26. A tunable laser assembly for detection of chemical fluids, said assembly comprising:

a vertical cavity surface emitting laser comprising an emission surface;

a cavity positioned adjacent said laser, said cavity comprising a top portion and a bottom portion, said top portion being transparent to energy emitted by said laser;

a detector positioned in said cavity;

a highly reflective mirror positioned adjacent said laser; and

a grating pivotably mounted above said laser, said grating cooperatively functioning with said laser and said highly reflective mirror transmitting energy emitted from said laser to said detector, wherein changing the angle of said grating changes the wavelength of the energy incident upon said detector.

27. A tunable laser assembly, said assembly comprising:

a laser;

a mirror;

a wave guide; and

a grating pivotably mounted above said laser, said grating cooperatively functioning with said laser and said highly reflective mirror transmitting energy emitted from said laser to said detector, wherein changing the angle of said grating changes the wavelength of the energy incident upon said detector.

28. The assembly of claim 27, wherein said wave guide is an optical fiber.